

## Adult common toads (*Bufo bufo*) with mutilated legs

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**The observation of adult common toads missing parts of their legs is reported. This anomaly strongly resembles the mutilations caused by the leech *Erpobdella octoculata* during the toad's larval stage. The survival of mutilated toads is discussed.**

In spring 1994 we caught a male common toad (*Bufo bufo*) missing the greatest part of both legs (fig. 1). It also missed the thumb of the left hand. The specimen was caught at a spawning site (in the "Roelofsven", one of the 25 ponds of the "Hatertse en Overasseltse vennen" near Nijmegen, The Netherlands) in a group of more than 400 free males and a hundred of amplexic pairs. It was brought to the laboratory where it was placed in a vivarium with 4 other common toads. When feeding this group with crickets (*Acheta domestica*), it appeared that the "cripple", using the stumps very efficiently to move forward (fig. 2), caught more crickets than the other ones and seemed hardly hampered by its handicap. It has to be stated that the other 4 toads were well fed. After two weeks of observations the cripple was set free in nature.

In former studies on *Bufo bufo* populations (VAN GELDER & RIJSDIJK, 1987), at the same locality we marked about 10,000 specimens and also found a number of specimens (about 30) missing a fair part of a leg or (in some cases) a total leg. One of these (missing the left leg up to and including the knee) was recaptured four consecutive years. We concluded that such mutilations were caused by mowing machines used in the agricultural parts of the toad's habitat. This idea was based on a few observations of severely wounded specimens of *Rana temporaria* — missing part(s) of their leg(s) — in recently mowed meadows. However, we never observed specimens of this latter species with healed amputations nor specimens of *Bufo bufo* with such wounds.

VEITH & VIETTEL (1993) described different grades of mutilations of legs of *Bufo bufo* up to the absence of almost both legs. The mutilations were observed in great numbers in recently metamorphosed specimens and appeared to be caused by the leech *Erpobdella octoculata* during the larval stage (VIETTEL & VEITH, 1992). The authors stated that in less than 1 % of the adult population this type of mutilation was observed too, but they gave no information about the grade of mutilation in the adult specimens. The cripple male

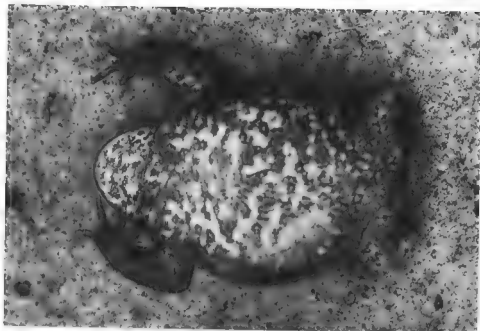


Fig. 1.

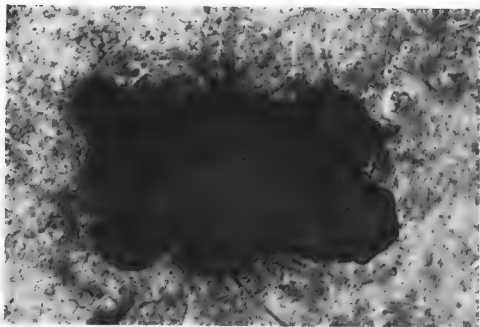


Fig 2.

caught in 1994 strongly resembles the recently metamorphosed specimen of figure 1e of VEITH & VIERTEL (1993). In fact all our specimens described above may have been mutilated during their larval stage by *Erpobdella octoculata*, as this leech is present in the spawning waters concerned. However, if mutilated larvae may survive until adulthood in spite of their handicap, also genetic causes (i.e. mutation) could underlie the phenomenon of adults missing arms and/or legs.

In general, specimens with anomalies are thought to have a higher predation risk than normal specimens. Concerning legs or arms various types of anomalies exist in amphibians. Polymely (one extra leg or arm, or more) has been described already in 1740 and since then it has been reported regularly (VAN VALEN, 1974). Mostly it is observed in single specimens, but there are also reports of anuran populations containing a relatively high frequency of polymelous individuals. However, no information is available concerning the influence of polymely on mortality.

Polydactyly (supernumerary fingers or toes) is also observed in many species (for references see DUBOIS, 1979). Its frequency of occurrence may vary per population, reaching 7.2 % in some *Bufo bufo* populations and up to 80 % in tadpoles and to 18 % in adults in some populations of the *Rana esculenta* complex (DUBOIS, 1979; BORKIN & PIKULIK, 1986). Based on the fact that polydactyly percentages in young specimens are higher than those in adult ones of the same population, DUBOIS (1979, 1984) and BORKIN & PIKULIK (1986) concluded that polydactylous specimens suffer higher mortality than normal ones.

Compared with polydactylous specimens, one would expect that mutilated specimens suffer a much higher mortality. Searching for an explanation of the fact that nevertheless a fair number of severely mutilated common toads do survive until adulthood, and then even may survive for some years, one could attribute this to the fact that *Bufo bufo* is a "sit and wait" strategist, and that normally its way of locomotion is walking and almost never jumping. However, DUBOIS (1979), investigating more than 4600 specimens of the *Rana esculenta* complex, reported that some of these missed a whole leg too. As leeches can injure larvae of the *Rana esculenta* complex (VEITH & VIERTEL, 1993), missing a leg by predation of leeches in the larval stage may also occur in jumping species.

#### ACKNOWLEDGEMENTS

The authors wish to thank Peter BELLINK and Raymond CREEMERS who caught the cripple specimen in 1994.

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Corresponding editor: Alain DUBOIS.

